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Sub-Federal Tax Exemptions and Their Efficiency for the Attraction of Investment

Empirical Analysis

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The federal structure of Russia allows local authorities to determine independently some business taxes, thus opening up the opportunity to influence the business climate in order to attract mobile factors in economic development. This paper reveals the trends in the granting of regional tax exemptions and estimates their effects on the attraction of investment. The panel data embraces the characteristics of regional legislation and the indices of regional economic development for 72 regions over the period 1992–1998. The main conclusions of the study are: 1) regional investment legislation has an essential and positive impact on investment attraction, but can not itself be an engine of regional economic development; 2) the inter-regional diffusion of investment-related sub-federal laws has a tendency to increase the level of tax reliefs, as well as their period and flexibility; 3) more active in the adoption of investment legislation are those regional authorities that have higher estimations of the lack of investment and risk.

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Keywords: Russia, tax exemptions, investment, regional legislation, panel data, regression analysis

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In a market economy, mobile investment resources are directed towards regions that provide better conditions for production, are less risky and have better infrastructure. In addition, taxation policy may have an essential influence on investment allocation. Among different taxes and tax exemptions in Russia, the regions determine some business taxes independently. Their authorities are interested in proposing attractive conditions for potential investors for different reasons, including the creation of new jobs and the extension of local sources of taxes. Therefore, regional tax rates and regional exemptions are tools of inter-regional competition for investment.

The aim of the project is to study empirically the sub-federal tax exemptions and their efficiency for the attraction of investment in Russia. In contrast with the clear relationships between the initial conditions and regional economic performance, there is no systematic evidence that more favourable regional tax regimes have succeeded in attracting investments and supporting economic growth in Russian regions. Neither is there agreement about the reasons which stimulate regional authorities to grant tax reliefs and concessions: are they motivated by attracting investment or by corruption and narrow political goals?

The empirical analysis relies on the legislative database "ConsultantPlus. The regional legislation" covering the determined period and the regional scope of the panel data. The panel covers 1992–1999 and 72 Russian jurisdictions and local authorities. Of interest are the tax exemptions and guarantees to those investors and enterprises realising investment projects which are provided in the sub-national investment laws, the decisions on tax concessions to particular firms, industries and small businesses on the adoption of development programmes, and the creation of "special economic zones" in the regions. The characteristics of the sub-federal legislation are related to the conditions of regional economic development. The source of data on the latter indices is Goskomstat's "Regions of Russia". Information provided by the regional administrations on investment projects in several Russian regions is also used.

The empirical estimations show that the influence of the initial conditions determines a large part of the level of investment activity in the Russian regions. But, alongside this factor, regional legislation also has an essential effect on regional investments. It turns out that investors are more sensitive not to the size nor to the period of the granting of tax re-

liefs, but to the adoption of the investment law itself, which make it possible for investors to obtain regional administration guarantees. However, a positive effect of the sub-federal investment legislation is not so strong as to block the influence of a combination of negative factors: unfavourable industrial specialisation and an insufficient level of infrastructure development. Given favourable initial conditions in a region, the absence of such a law does not imply a loss of its investment attractiveness. Sub-federal legislative initiatives can compensate for some adverse factors of development, but can not themselves become a sole source of development.

The analysis of the factors which determine the features of the regional legal set-ups shows that more active in the adoption of investment legislation happened to be those regional authorities which have higher estimations of the lack of investment. Investment laws are considered in terms of risk reductions and in the creation of more favourable conditions for business. There are differences in the practice of the passing of investment laws. However, their dissemination has a tendency to increase the level of tax reliefs, as well as their period and flexibility, along with a growth in the number of regions which have adopted this legislative initiative.

INTRODUCTION

The legislative process in the Russian regions started in 1992. The clause enabling regions to pass their own legislative acts was included in the Federal Treaty signed in 1992. Since then, Russian regions have passed thousands of laws and other documents affecting many spheres of life.

The fact that regional authorities actively use their economic power to regulate the investment climate of regions is confirmed in Vizhina (1998), in which she analyses laws, resolutions and decrees of the legislative and executive regional bodies of 14 jurisdictions between 1995 and 1997. The analysis shows that regional legislative activity, directed towards an improvement in the investment climate of the regions, is growing rapidly.

The experience of the adoption at the regional level of laws granting concessions and guarantees to investors is now widespread. According to Ekspert's rating (October 19, 1998), in 1998 Russian regions have markedly increased their legislative activities aimed at attracting investment. More than half the Russian regions have passed various investment laws, providing tax exemptions for investors and for enterprises realising investment projects.

In Kuznestova (1998), a comparative study of two neighbouring regions — Novgorod and Pskov — concludes that regional tax policy has a determining role in the economic development of the regions. These regions have practically identical natural conditions. Their industrial structures and production levels prior to the reform were similar, and earlier investment ratings placed these regions alongside each other. But Novgorod's authorities have both granted and fixed in law tax reliefs and guarantees that are both significant and stable for domestic and foreign investors. And now the Novgorod region has a substantial lead over the Pskov region on practically every indicator. In 1997, industrial production per capita in the Novgorod region was higher than in Pskov by almost 100%; investment was higher by 37% (foreign investment was 82 times as big); household income per capita was higher by 31%; tax revenues in the regional budget were higher by 55%; the level of unemployment was lower by a factor of almost two; firms with foreign capital produced more than 50% of gross regional product; and firms in the Novgorod region in 1997 had practically no wage arrears.

But, according to Polishchuk (1999), the economic efficiency of regional legislative initiatives aimed at improving the investment climate of the Russian regions "has failed to leave a marked impact either on gross investments in the Russian economy, or on the allocation of investments across the country." Firstly, because of the high political, institutional and economic risk overall in the country and the lack of guarantees at the federal level which can not be compensated for by sub-federal legislation. Secondly, because of the lack of credibility of the regional legal and regulatory regimes. The lack of co-ordinating constraints of the federal centre on the regional initiatives, and the insufficient economic integration of Russian regions, do not stimulate the dissemination of successful regional experiments (including connected with the setting up of a more favourable entrepreneurial climate) or produce political incentives for regional authorities that favour control over the regional economies instead of setting impartial rules for economic agents. Under these conditions, the economic performance of the regions continues to be largely pre-determined by their natural resources and the industrial profiles they have inherited from the past, and regional legislative efforts can not be considered as a means of inter-regional competition for investment.

This conclusion is proved by statistics on investment allocation in the country. In 1997, almost 80% of foreign investment in the Russian economy was concentrated in Moscow. Gross foreign investment in Russia in 1997 increased by 50% in comparison with the previous year, but investments made outside of the capital declined by 1/3. The regions that received these investments had both liberal and conservative economic regimes, and featured a spectrum of investment legislation. Domestic investments were also made in Moscow, the Moscow region and in the oil-rich regions of Siberia.

Moscow is the strongest and most frequently-mentioned example of the huge inter-regional asymmetries that can be found in Russia. The profound concentration in Moscow of the country's investment is proclaimed to be a demonstration of the irrelevance of regional tax reliefs for investment. Therefore, a more detailed review of the literature devoted to the investment attractiveness of Moscow is necessary. "Expert" writes that, although it is the clear leader in total investment, Moscow does not belong to the group of the leading 20 regions with the best manufacturing dynamics. Therefore, Moscow's investments are directed, mainly, towards services and other local demand-oriented spheres. The city's manufacturing base is not so attractive to investors. It seems plausible that Moscow's successful development is explained by the specific capital city position of Moscow, enabling it to grab

financial resources. It has resulted in the "Dutch disease" of Moscow, aggravated by a mode of registration in the city which prohibits the free flow of labour from other regions. From this point of view, the success of Moscow in the attraction of investment does not look so prominent. The latest rating of "Expert" reports an unprecedented decrease in foreign direct investment in Moscow — by almost four times (the reduction of total foreign direct investment in Russia is 14%) — and its reallocation for the benefit of regions which had not, up to this point, drawn the attention of foreign investors.

There is not a single point of view in the literature on the reasons which stimulate regional bodies to grant tax exemptions. The legislative regional initiatives in this sphere can be explained both as motives aimed at the setting up of a more favourable entrepreneurial climate and at a strengthening of the competitive position of the region, and as an imitation of the legislative activity of other authorities wishing to maintain their positions in the legislative field. The latter is set out with political aims rather than economic ones.

In favour of the economic motives of regional authorities is Vizhina's analysis of the trends in the granting of tax concessions by regions that have the most problematic situation with investment supply (Vizhina, 1998).

Polishchuk (1998) explains the differences in the practice of granting tax exemptions among the regions as an evolution into legislative lobbying by regional interests, and as a tendency to capture a maximum legal space which is still free because of the weakness of the federal centre.

Thus, there is not an obvious correlation between sub-federal legislative initiatives and regional economic performance. This study has the aim of revealing trends in the granting of regional taxes and estimating their effect on investment supply in the regions.

1. HYPOTHESIS FOR THE EMPIRICAL ANALYSIS

The main focus of the study is the estimation of the impact of the tax reliefs granted by Russian regions for regional investments. There is no systematic evidence that investors are attracted by the tax breaks and concessions offered by regional authorities. There are several examples where, under otherwise comparable conditions, regions granting tax exemptions to investors outperform those which do not provide such concessions. But for many regions the reaction of investors to differences in tax regimes is weak.

The impact of a region's legislative initiatives on the attraction of investment is obscured by other factors and, in particular, by the structures of the regional economies, the provision of public goods, confidence in the regional authorities, and others. An estimation of the contribution of sub-federal tax exemptions to the supply of investment requires controlling these important factors in regional development. Consequently, the development of the results of regional tax breaks in terms of investment supply determines a system of hypotheses.

Hypothesis 1. *Sub-federal tax reliefs are essential for the inter-regional distribution of investment in Russia. A more preferential taxation regime will attract more investment*.

The investment crisis undermines the hope of the regional authorities for noticeable investments. Therefore, the regional authorities in Russia sometimes do not care about the level of confidence in them amongst investors and lose incentives to a consistent economic policy. Furthermore, they have achieved broad legislative power (Polishchuk, 1998), which is weakly controlled by the federal centre. Firstly, the number of sub-national legislative acts is increasing at a pace, which makes it difficult to monitor this process. Secondly, given a lack of political resources, the federal administration is seeking to substitute missed support in society for an alliance with the regional authorities. As a result, the regions face few restrictions in their law-making activities. Regional authorities adopt documents cancelling granted concessions and guarantees, and violate their own laws (Polishchuk, 1999). Trust in individuals becomes a substitute for the lack of a stable system of law and law enforcement.

Hypothesis 2. *The lack of confidence in the regional administration plays an essential role in investment decisions, restraining investment into the region*.

Notwithstanding the relevant role of the institutional set-ups of regional bodies, the existing characteristics of industries are the most influential factor in current and future regional economic performance. The regional industrial structure has been formed by decades of central planning and is often inconsistent with market needs. The change of the structure that took place during the time of economic transition was driven by suppressed domestic demand, the collapse of the military complex, the non-competitiveness of manufacturing industries, and an increased reliance on international trade. Under these conditions, the regions specialising in exportable commodities (oil, gas, and metallurgy and chemistry products) have much better positions than those where

the local economies are dominated by the military-industrial complex, or by manufacturing or agriculture.

Hypothesis 3. *Regions with a higher share of extraction and export-oriented industries attract more investment* (*so, the investment attractiveness of these industries remains high and the inter-industrial flow of capital maintains and seems to enforce the importance of these industries*).

Equally, where there is an industrial specialisation, the level of development of public goods in the regions is an essential factor influencing an investor's decision-making. The decision to invest in a particular project under otherwise comparable regional conditions is influenced by the requirements for education and communication services, and transport and market infrastructure, which depend on the aims of the projects and those of the investor.

Hypothesis 4. *Public goods are the factors which influence investment decisions in Russia, and a positive correlation between the level of the development of public goods and the supply of investment is expected*.

Polishchuk makes the assumption that regional legal regimes have been customised to local economic conditions and are therefore endogenous to regional economic structures. The creation of the institutional environment in Russian regions reflects the economic priorities of the latter. Their priorities are shaped by the conditions specific to particular regions. Russian regions make pragmatic choices in selecting their legal and regulatory regimes (Polishchuk, 1999). These conclusions are in accordance with the results of other studies (Ahrend, 1999; Berkowitz and DeJong, 1998; Lavrov and Kuznetsova, 1997; Popov, 1999).

If the regional tax regime reflects the characteristics of the regional economy, being simultaneously an explanatory variable of the investment supply, the estimations of the latter may suffer from potential endogeneity problems. So the system of hypotheses underlying the system of equations should be extended by others regarding regional tax exemptions.

Proof of the existence of motives aimed at the creation of more favourable entrepreneurial climates and at strengthening the competitive positions of the regions, within the behaviour of regional authorities was given in Vizhina's analysis, in which she revealed the tendency to grant tax concessions in regions which have a comparatively lower supply of investment. This study was based on data for 14 Russian local authorities between 1995–1997 (Vizhina, 1998). We would like to obtain a con-

firmation of this conclusion across a broader regional and temporal empirical base.

Hypothesis 5. *Those regions that have higher estimations of investment shortages and a comparatively unfortunate combination of industrial development factors and underdeveloped public goods demonstrate a greater readiness to use legislative measures to improve the competitive position of the region and to attract investment*.

Profound differences between legal and regulatory regimes in Russian regions co-exist with striking similarities, which are evidence of the wide dissemination of regional laws and policies throughout the country.

Owing to the widespread crisis phenomena all over the country and the instability of the competitive positions in many regions, tax exemptions in one region can be considered by another regional authority as a factor undermining its competitive position and may stimulate it to adopt a similar approach. It would also be wrong not to take into the account the political struggle among the regional elites in the lobbying for regional interests.

The practice of the regional granting of tax exemptions allows an assumption of the dissemination of these legislative initiatives.

Hypothesis 6. *The higher the number of regions that have adopted tax exempting laws, the more rapidly diffused are these kind of laws*.

Alongside the adoption of regional investment laws, the fundamentals of its particular features are of interest. Why are there variations in the size and period of the granting of profit and property taxes? Why are there two approaches to the granting of tax exemptions to investors? Why do some regions grant individual and industrial concessions?

It is natural to find more concessions being granted to investors by authorities in more problematic regions, as investment laws operate with a certain level and period of tax exemptions and of guarantees as parameters which should be influenced by the conditions of regional development.

Hypothesis 7. *The size and period of the granting of concessions to investors, and the providing of additional benefits to foreign investors, have a positive correlation with estimations of investment shortages by regional administrations and with the diffusion of regional investment legislation around the country*.

Regional legislative efforts to attract investors take different forms in various regions. A number of regional investment laws offer investors

clear-cut terms of operation upon their meeting of specified conditions. Other investment laws provide for the participation of the regional administration in the assessment of projects and in determining the actual level of tax exemptions.

We suppose that a regional administration reserves to itself the capacity for greater active control via the granting of tax reliefs to investors in situations where the concessions are not fixed in the text of the investment law but are discussed with the administration.

Hypothesis 8. *A more active control of a regional administration in the granting of tax exemptions to investors is a feature of relatively stable regions*.

Regional authorities grant tax breaks not only to investors but also to existing firms and enterprises which are not realising investment projects. It is a well-known fact that tax pressures on businesses are high in Russia, and many firms and enterprises can not and do not pay taxes. Tax exemptions under such conditions are an alternative to bankruptcy. Taking into account that, in spite of the recent attempts to make intergovernmental fiscal relations more rule-based, budgetary constraints in Russian regions remain soft (Polishchuk, 1998). Facing the problem of unemployment, regional authorities prefer to provide tax exemptions instead of closing firms.

Hypothesis 9. *The industrial and individual tax exemptions and concessions to small businesses granted by regional authorities are not aimed at the attraction of investment, but have the purpose of supporting firms already operating in the region and preventing the region from experiencing an increase in unemployment*.

2. DATA

Our empirical analysis relies on the legislative database "ConsultantPlus. The regional legislation". This legal database contains more than 250 thousand documents on 72 Russian jurisdictions and local authorities for the 1992–1999 period (the most recent data is for February 1999). The period covered and the regional scope of the database determine the structure of the panel on which the empirical analysis was based. The panel was constructed over the 1992–1998 period for 72 regions (the list of the regions represented and not represented in the database are contained in Appendix A).

The system of tax reliefs and guarantees granted to investors and to the firms participating in investment projects is usually regulated by regional

investment laws. The number of regional investment laws implemented was small at the beginning of the period under consideration, but it did increase rapidly, especially in the last two years.

Table 1. Share of regions that have introduced an investment law, percentage.

1992	1993	1994	1995	1996	1997	1998
1	3	4	11	22	51	79

In spite of the varying texts of such documents, it is possible to distinguish two approaches to the granting of tax reliefs to investors. The first approach determines the period and the value of the tax reliefs contained in the law. The second fixes the principal right of investors to the tax reliefs in the law, but the value and period of these are determined by the regional administration. In the latter case, the control over investment flows by the regional authorities is enhanced.

Table 2. Percentage of regional investment laws that do not fix the magnitude of tax reliefs.

1992	1993	1994	1995	1996	1997	1998
100	50	33	13	19	24	30

Accordingly, the following variables, reflecting the presence and basic features of the investment laws, were constructed:

- A binary variable; which takes the value "0" in the case of absence and the value "1" in the case of the presence of the law in the region;
- The value of profit tax relief; the variable for which takes the magnitude "0" if the value is not fixed in the law;
- The value of property tax relief; the variable takes the magnitude "0" if the value is not fixed in the law;
- The period for which tax reliefs are granted; the variable for which takes the magnitude "0" if the value is not fixed in the law;
- A binary variable; which takes the value "0" if the magnitude and period of tax reliefs are fixed in the law and the value "1" if they are determined by an administrative body.

In some regions, the investment laws grant a preferential tax regime to overseas investors, or otherwise a special law has been adopted on tax reliefs for foreign investors. To reflect such a favourable tax legislation, an additional variable was introduced which takes the value "1" if there are concessions for foreign investors in comparison with domestic ones and the value "0" in the opposite case.

Alongside the investment laws aimed at supporting enterprises in general across the whole territory of a region, there have appeared approaches in which tax reliefs for individual firms, industries or small businesses have been granted. In addition, special development programmes have been developed. In a number of regions, "special economic zones" have been created in which special preferential taxation orders have been established. Such initiatives by regional authorities seem to have an impact on the general entrepreneurial climate of the region. Therefore, the panel was supplemented by binary variables reflecting the presence or absence of regional development programmes, individual or industrial tax reliefs, tax reliefs for small businesses and special economic zones. The last index was supplemented by variables of the level and period over which tax reliefs are granted in the free zone.

Table 3. Share of regions using different incentive regimes, percentage.

	1992	1993	1994	1995	1996	1997	1998
Personal tax reliefs	1	3	8	17	26	26	28
Industrial tax reliefs	1	6	14	25	38	40	47
Tax reliefs to small businesses	0	1	3	4	11	14	19
Development programmes	0	3	13	18	26	32	36
Free economic zones	1	1	3	6	7	10	11

We agree with Polishchuk that the factor of confidence in regional legislative initiatives is crucial to the investment decision. This confidence can be undermined by the precedent of the cancellation of previously-granted tax reliefs or other rights. In this connection, a variable was included in the panel which takes the value "1" from the moment of the cancellation of the tax reliefs until the end of the period under consideration.

Table 4. Share of regions that had cancelled tax reliefs at least once, percentage.

1992	1993	1994	1995	1996	1997	1998
0	0	0	1	6	10	13

Besides variables reflecting the process of the granting of tax reliefs, the panel includes fundamental variables: investments; the structure of industrial production; the share of unprofitable firms in the region; the incomes and expenditures of the regional budget; the average level of the profitability of production in the region; the volume of production in the region; the development of public goods; etc. (the list of all variables is contained in Appendix B). The indices listed above are taken from the Goskomstat Statistical Yearbook "Regions of Russia".

In accordance with the formulated hypotheses, an important characteristic determining the granting of tax concessions at the sub-federal level is the regional administrations' estimation of the lack of investment in their region. An estimation of this parameter is the difference between demand for and supply of investment. The demand for investment should be considered in terms of the investment projects in the current year which have received the support of the regional administration, but not as the demand for investment under the satisfaction of all the potential needs of the regions, which is an infinitely large value.

We have obtained information on the investment projects for 1997 of regions, republics and the autonomous areas of Siberia, and of the Novgorod region, in all for 19 territories. The descriptive statistics regarding the total demand for investment and the structure of the investment projects are presented in Appendix C. In spite of the small geographical scope of our sample, it involves authorities having different status, different industrial specialisations and a different scale, reflected in the size of the demand for investments and in the industrial structure of investment projects. This variety provides the ground to use the given group of regions for the approximation of demand for investments in other regions.

The task is to construct a function of the demand for investment using the parameters of regional development that are known for all regions on the panel. An assumption was made that the factors determining the demand for investments are: 1) accumulated fixed capital, demanding resources for maintenance (positive correlation); 2) the level of unemployment, stimulating the creation of new jobs (positive correlation); and 3) the number of firms, reflecting the level of demand for

investment (positive correlation). The testing of this assumption was carried out on the sample. In this case, not only the confirmation of a statistical significance of the listed factors, but also the obtaining of a high value of the coefficient of determination, were held important. This is essential for obtaining the most exact approximation of the unobserved values in the demand for investments in regions not represented in the sample in 1997, and for all regions in other years.

The estimated equation is as follows:

$$Inv\_Demand_i = \alpha_0 + \alpha_1 FC_i + \alpha_2 UNEMP_i + \alpha_3 NENT_i + \varepsilon_I \, .$$

Here:

Inv_Demand_i — total demand for investments in region i;

FC_i — fixed capital in region i;

$UNEMP_i$ — number of unemployed in region i;

$NENT_i$ — number of enterprises in region i.

The results are shown in Table 5.

Table 5. Estimation of the demand for investment.

	Coefficient	$P > \|t\|$
Fixed capital	1.56	0.001
Number of unemployed	167.26	0.046
Number of enterprises	0.36	0.007
R^2	0.92	

3. ESTIMATION METHODS

The investment attractiveness of a region depends on a combination of the whole package of regional factors, including some specific features, for instance the reputation of the regional authority in the eyes of investors, as well as the environmental, political and crime-related risks. The panel structure of the data allows us to take into account specific regional factors by using fixed and random effect models. In the fixed effect model, the set of the specific regional characteristics is considered as a parameter to be constant over time and specific to each region. In the random effect model, the specific regional features were reflected by a random disturbance, which is constant over time and with

zero conditional expectation. More adequate for our analysis is the fixed effect model, under which the constant component can be treated as a level of the investment activity in a region.

The system of the previously-formulated hypotheses within the empirical analysis has formed a system of equations which are connected directly through variables or which have correlated errors.

The first four hypotheses are connected with the properties of the function of the supply of investment; to test these hypotheses, the following equation was estimated:

$$Sh\_Inv_{it} = a_0 + a_1 Law_{it} + a_2 Pt_{it} + a_3 RSt_{it} + a_4 Pd_{it} + a_5 Adm_{it} + \\ + a_6 Trm_{it} + a_7 Z_{it} + a_8 Frn_{it} + a_9 Prg_{it} + a_{10} L_{it} + a_{11} Pin_{it} + a_{12} RL_{it} + \\ + a_{13} RD_{it} + a_{14} PH_{it} + a_{15} SRV_{it} + a_{16} SCN_{it} + \gamma_i + \varepsilon_{it}\,, \qquad (1)$$

Here:

Sh_Inv_{it} — share of region i in the total amount of non-budgetary investments in fixed capital in year t;

Law_{it} — availability (1) or absence (0) of an investment law in region i in year t;

Pt_{it} — profit tax relief fixed under the investment law in region i in year t;

RSt_{it} — property tax relief fixed under the investment law in region i in year t;

Pd_{it} — the period on which tax reliefs under the investment law in region i in year t are granted;

Adm_{it} — a variable possessing the value "1" if the tax reliefs are not captured in the law but are determined by the regional administration, and "0" in all other cases;

Trm_{it} — a variable possessing the value "1" from the moment of the adoption of a document concerning the cancellation of tax reliefs in region i, and "0" in all other cases;

Z_{it} — existence (1) or absence (0) of free economic zones in region i in year t;

Frn_{it} — existence (1) or absence (0) of a more preferential tax regime or of an investment law aimed at foreign investors in region i in year t;

Prg_{it} — existence (1) or absence (0) of development programmes in region i in year t;

L_{it} — share of unprofitable firms in region i in year t;

Pin_{it} — share of production of the fuel industry, metallurgy, timber and the petrochemical industries in total industrial production in region i in year t;

RL_{it} — density of railway tracks in general use in region i in year t;

RD_{it} — density of roads in region i in year t;

PH_{it} — the proportion of the urban population with telephones in region i in year t;

SRV_{it} — level of services per capita in region i in year t compared with the average level in the country;

SCN_{it} — the share of research staff in region i in year t;

γ_i — a constant reflecting the level of investment activity in region i;

ε_{it} — an error term.

Hypotheses 5 and 6 connect the process of the adoption of the investment law with the characteristics of regional development; their testing was implemented by the equation:

$$Law_{it} = b_0 + b_1 Inv\_shr_{it} + b_2 Inv\_index_{it} + b_3 NLaw_t + b_4 L_{it} + \\ + b_5 PRFT_{it} + b_6 Pin_{it} + b_7 Bud\_def_{it} + b_8 Prg_{it} + b_9 RL_{it} + \\ + b_{10} RD_{it} + b_{11} SRV_{it} + b_{12} PH_{it} + b_{13} UNEMP_{it} + \varepsilon_{it}\,, \qquad (2)$$

Here:

Inv_shr_{it} — the ratio of the difference in the demand for and supply of investment in fixed capital to the demand for investment in fixed capital in region i in year t; this parameter is an estimation of the shortage of investment: if we assume that all good projects find investors, a reason for the lack of investment for unrealised projects is the higher risk (economic, criminal, environmental, social and political) — thus, the given parameter also indirectly characterises the integral level of risk in the region;

Inv_index_{it} — dynamics of the investments in fixed capital in region i in year t;

$NLaw_t$ — the number of investment laws passed by year t;

$PRFT_{it}$ — the profitability of industrial production in region i in year t;

Bud_def_{it} — the actual deficit of the regional budget income in year t.

Hypotheses 7 and 8 generalise the system features of the characteristics of the regional investment legislation; therefore, to test these hypotheses, a system of equations was estimated, each one correspond-

ing to a particular characteristic of the legislation:

$$Pt_{it} = c_0 + c_1 Inv\_shr_{it} + c_2 Inv\_index_{it} + c_3 NLaw_t + c_4 L_{it} + \\ + c_5 PRFT_{it} + c_6 Pin_{it} + c_7 Bud\_def_{it} + c_8 Prg_{it} + c_9 RL_{it} + \\ + c_{10} RD_{it} + c_{11} SRV_{it} + c_{12} PH_{it} + \varepsilon_{it}\,, \quad (3)$$

$$RST_{it} = d_0 + d_1 Inv\_shr_{it} + d_2 Inv\_index_{it} + d_3 NLaw_t + d_4 L_{it} + \\ + d_5 PRFT_{it} + d_6 Pin_{it} + d_7 Bud\_def_{it} + d_8 Prg_{it} + d_9 RL_{it} + \\ + d_{10} RD_{it} + d_{11} SRV_{it} + d_{12} PH_{it} + \varepsilon_{it}\,, \quad (4)$$

$$Pd_{it} = f_0 + f_1 Inv\_shr_{it} + f_2 Inv\_index_{it} + f_3 NLaw_t + f_4 L_{it} + \\ + f_5 PRFT_{it} + f_6 Pin_{it} + f_7 Bud\_def_{it} + f_8 Prg_{it} + f_9 RL_{it} + \\ + f_{10} RD_{it} + f_{11} SRV_{it} + f_{12} PH_{it} + \varepsilon_{it}\,, \quad (5)$$

$$Adm_{it} = l_0 + l_1 Inv\_shr_{it} + l_2 Inv\_index_{it} + l_3 NLaw_t + l_4 L_{it} + \\ + l_5 PRFT_{it} + l_6 Pin_{it} + l_7 Bud\_def_{it} + l_8 Prg_{it} + l_9 RL_{it} + \\ + l_{10} RD_{it} + l_{11} SRV_{it} + l_{12} PH_{it} + l_{13} UNEMP_{it} + \varepsilon_{it}\,, \quad (6)$$

$$Z_{it} = t_0 + t_1 Inv\_shr_{it} + t_2 Inv\_index_{it} + t_3 NLaw_t + t_4 L_{it} + \\ + t_5 PRFT_{it} + t_6 Pin_{it} + t_7 Bud\_def_{it} + t_8 Prg_{it} + t_9 RL_{it} + \\ + t_{10} RD_{it} + t_{11} SRV_{it} + t_{12} PH_{it} + t_{13} UNEMP_{it} + t_{14} Geo_i + \varepsilon_{it}\,, \quad (7)$$

$$Frn_{it} = k_0 + k_1 Inv\_shr_{it} + k_2 Inv\_index_{it} + k_3 NLaw_t + k_4 L_{it} + \\ + k_5 PRFT_{it} + k_6 Pin_{it} + k_7 Bud\_def_{it} + k_8 Prg_{it} + k_9 RL_{it} + \\ + k_{10} RD_{it} + k_{11} SRV_{it} + k_{12} PH_{it} + k_{13} UNEMP_{it} + k_{14} Geo_{it} + \varepsilon_{it}\,, \quad (8)$$

Here, Geo_i is a dummy variable possessing the value (1) for frontier regions and the value (0) for internal ones.

Hypothesis 9 concerns tax concessions, which do not directly effect investment, but which do influence the business climate in a region; its testing also needs an estimation of a set of equations:

$$Sml_{it} = m_0 + m_1 Inv\_shr_{it} + m_2 Inv\_index_{it} + m_3 NLaw_t + m_4 L_{it} + \\ + m_5 PRFT_{it} + m_6 Pin_{it} + m_7 Bud\_def_{it} + m_8 Prg_{it} + m_9 RL_{it} + \\ + m_{10} RD_{it} + m_{11} SRV_{it} + m_{12} PH_{it} + m_{13} UNEMP_{it} + \varepsilon_{it}\,, \quad (9)$$

$$Indst_{it} = n_0 + n_1 Inv\_shr_{it} + n_2 Inv\_index_{it} + n_3 NLaw_t + n_4 L_{it} + \\ + n_5 PRFT_{it} + n_6 Pin_{it} + n_7 Bud\_def_{it} + n_8 Prg_{it} + n_9 RL_{it} + \\ + n_{10} RD_{it} + n_{11} SRV_{it} + n_{12} PH_{it} + n_{13} UNEMP_{it} + \varepsilon_{it}\,, \quad (10)$$

$$Indvd_{it} = v_0 + v_1 Inv\_shr_{it} + v_2 Inv\_index_{it} + v_3 NLaw_t + v_4 L_{it} + \\ + v_5 PRFT_{it} + v_6 Pin_{it} + v_7 Bud\_def_{it} + v_8 Prg_{it} + v_9 RL_{it} + \\ + v_{10} RD_{it} + v_{11} SRV_{it} + v_{12} PH_{it} + v_{13} UNEMP_{it} + \varepsilon_{it}\ , \quad (11)$$

Here:

Sml_{it} — availability (1) or absence (0) of tax reliefs to small businesses in region i in year t;

$Indst_{it}$ — availability (1) or absence (0) of industrial tax reliefs in region i in year t;

$Indvd_{it}$ — availability (1) or absence (0) of tax reliefs for particular enterprises in region i in year t.

Thus, the system consists of 11 equations. To estimate the system, a two-stage least squares method was applied. To test assumptions about the probability distribution of the error terms, the Durbin–Watson test, White's general heteroscedasticity test and the Jarque–Bera test of normality were used.

Unlike the Goldfeld–Quandt test of heteroscedasticity, which requires a re-ordering of the observations with respect to an independent variable (which is difficult for our sample) or the Breisch–Pegan–Godfrey test, which is sensitive to the assumption of normality, the general test of heteroscedasticity proposed by White does not rely on such an assumption of normality. The Jarque–Bera test of normality is an asymptotic large-sample test. These properties of White's and Jarque–Bera's tests explain the application of them in our estimations.

The obtained statistics of the tests for the system of equations allow the conclusion that probability assumptions about error terms are valid. The Durbin–Watson statistic belongs to the intervals where the hypothesis of autocorrelation is not accepted. The statistics of White's and Jarque–Bera's tests belong to the critical regions of χ^2 distributions and the hypothesis of homoscedasticity and normality are not rejected.

4. RESULTS OF THE ESTIMATIONS AND THEIR ANALYSIS

The results of the estimation of the first equation in the system are shown in Table 6.

The regression estimations for the equation show that there is a general positive correlation between investment supply and regional investment legislation. Adoption of the investment law is positive and a significant factor in investment attraction. But less significant for investors are the

levels of profit tax and property tax reliefs and the way the tax concessions are granted (*i.e.* fixed in the law or up for discussion with the regional administration). Obviously more important for investors are demonstrations of policy support for investors and the readiness of regional bodies to provide guarantees to investors.

Table 6. Factors influencing investment supply in the regions.

Variables	a_i	$P > \|t\|$
Investment law	0.181	0.031
Profit tax reliefs	0.453	0.074
Property tax reliefs	0.181	0.065
Period of the granting of tax reliefs	0.382	0.174
Administrative way of determining the value of tax reliefs	0.029	0.575
Cancellation of tax reliefs	−0.121	0.049
Free economic zones	0.026	0.800
Concessions to foreign investors	0.101	0.155
Development programmes	0.036	0.218
Share of unprofitable enterprises	−0.011	0.003
Share of "stable" industries	0.008	0.011
Density of railway tracks	−0.001	0.320
Density of roads	0.003	0.046
Provision of telephones	0.014	0.053
Development of services	0.180	0.028
Research staff	0.025	0.030
R^2	0.49	
Durbin–Watson statistic	2.01	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.28	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.13	

The absence of a statistically significant dependence between investment supply and concessions to foreign investors accord with this statement. The effect of concessions to foreign investors may be lost in the dynamics of total investment because of their small and reduced share. According to Kravchenko (1997), the share of foreign direct investment in 1992–1997 was approximately 2% of the total amount.

Statistically significant and negative is the cancellation of tax reliefs, which confirms the hypothesis about the important role of confidence in regional authorities. The effect of the revoking of tax concessions does

not exceed the effect of the adoption of an investment law, but it does cancel it out to a large extent. The difference between the corresponding coefficients, which gives an estimation of a combination of the availability of the investment law and the cancellation of concessions, is 1/3, reflecting the effect of the law on investment supply.

Industrial specialisation, the efficiency of production and the level of development of public goods in the region also play an essential role in investors' decision-making. Regions having a comparatively high weight of steady industries — fuel, metallurgy, petrochemical and timber — have greater levels of investment. The positive correlation indicates a steady trend towards an inter-industrial overflow of capital into these industries. A significant negative factor in the equation is the share of unprofitable production in the region. Statistically significant and positive is the greater part of the indices of the development of public goods in the region: the density of roads, services and research potential. The latter results are quite natural and confirm the hypothesis about the significant role of public goods and the industrial parameters of the regions.

The estimations of the absolute values of the contributions of industrial characteristics and public goods to the supply of investment show that the favourable (or unfavourable) combination of these development factors overlaps the effect of the absence (or adoption) of the investment law. There is a wide variation between the regions concerning the different factors of development in Russia. And it is understandable why there is not an obvious correlation between successes in the attraction of investment and the legislative initiatives of the regional authorities.

The estimations of the second equation in the system, testing the hypotheses about the factors in the adoption of the investment law, are presented in Table 7.

The significant factors behind the adoption of an investment law are the lack of investment in the region, the spread of investment law as a legislative initiative in the country and the passing of development programmes in the region.

The estimations have confirmed the hypothesis that the greater the lack of investment realised by the regional authorities, the greater the probability of using the legislative powers of the authorities to attract it. This conclusion is confirmed by the statistically significant positive correlation with development programmes in the region; the passing of the programme demands investment and stimulates a search for ways in which it can be attracted. A less significant factor is the dynamics of investment in the region. A decrease in regional investment under the condi-

tions of the investment crisis in country may not be an incentive for creating a more favourable climate for investors.

Table 7. Factors in the adoption of investment laws.

Variables	b	$P > \|t\|$
Estimation of the lack of investment	0.0002	0.000
Dynamics of investments	−0.003	0.059
The number of regional investment laws passed	0.023	0.000
Share of unprofitable enterprises	0.005	0.138
Share of "stable" industries	−0.001	0.752
Profitability of production	0.315	0.380
Development programmes	0.141	0.039
Density of railway tracks	−0.001	0.068
Density of roads	0.001	0.206
Provision of telephones	0.002	0.753
Development of services	−0.104	0.337
Level of unemployment	2.104	0.371
Deficit of regional budget income	0.00005	0.403
R^2	0.36	
Durbin–Watson statistic	1.79	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.54	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.26	

The characteristics of industrial potential, the level of development of public goods, the rate of unemployment and the income of the regional budget do not influence the process of the adoption of an investment law.

The results of the estimations of the equations testing the factors of the particular characteristics of the investment legislation are presented in Tables 8–13.

Table 8. Factors in the level of profit tax relief contained in the investment law.

Variables	c	$P > \|t\|$
Estimation of the lack of investment	0.00003	0.000
Dynamics of investment	−0.00147	0.253
The number of regional investment laws passed	0.01328	0.000
Share of unprofitable enterprises	0.00021	0.941
Share of "stable" industries	−0.00028	0.877
Profitability of production	0.17254	0.517
Development programmes	0.09522	0.342
Density of railway tracks	−0.00038	0.391
Density of roads	0.00106	0.357
Provision of telephones	−0.00066	0.873
Development of services	−0.01383	0.884
Deficit in regional budget income	0.00009	0.156
R^2	0.22	
Durbin–Watson statistic	1.93	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.29	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.18	

Table 9. Factors in the level of property tax relief contained in the investment law.

Variables	d	$P > \|t\|$
Estimation of the lack of investment	0.00003	0.000
Dynamics of investment	−0.00252	0.030
The number of regional investment laws passed	0.01222	0.001
Share of unprofitable enterprises	−0.00114	0.702
Share of "stable" industries	0.00058	0.744
Profitability of production	0.00303	0.993
Development programmes	0.10686	0.341
Density of railway tracks	−0.00057	0.179
Density of roads	0.00158	0.162
Provision of telephones	−0.00008	0.987
Development of services	0.01658	0.868
Deficit in regional budget income	0.00009	0.134
R^2	0.24	
Durbin–Watson statistic	1.94	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.68	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.53	

Table 10. Factors in the period of the granting of tax reliefs in the investment law.

Variables	f	$P > \|t\|$
Estimation of the lack of investment	0.00012	0.000
Dynamics of investment	−0.00884	0.031
The number of regional investment laws passed	0.04926	0.000
Share of unprofitable enterprises	0.00458	0.722
Share of "stable" industries	−0.00178	0.795
Profitability of production	1.30035	0.244
Development programmes	0.33438	0.375
Density of railway paths	−0.00134	0.409
Density of roads	0.00441	0.266
Provision of telephones	0.00920	0.581
Development of services	0.10195	0.813
Deficit in regional budget income	0.00031	0.149
R^2	0.20	
Durbin–Watson statistic	1.92	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.22	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.11	

Table 11. Factors in the administrative mechanics of granting tax reliefs.

Variables	I	$P > \|t\|$
Estimation of the lack of investment	−0.00016	0.000
Dynamics of investment	−0.00026	0.694
The number of regional investment laws passed	0.00441	0.022
Share of unprofitable enterprises	−0.00223	0.168
Share of "stable" industries	0.00204	0.038
Profitability of production	−0.02564	0.850
Development programmes	0.01565	0.704
Density of railway tracks	−0.00052	0.196
Density of roads	−0.00589	0.340
Provision of telephones	−0.00308	0.070
Development of services	−0.12077	0.012
Deficit in regional budget income	−0.00005	0.365
Level of unemployment	−0.79813	0.376
R^2	0.25	
Durbin–Watson statistic	2.08	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.46	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.21	

Table 12. Factors in the setting up of free economic zones.

Variables	t	$P > \|t\|$
Estimation of the lack of investment	0.00017	0.000
Dynamics of investment	−0.00020	0.708
The number of regional investment laws passed	−0.00180	0.219
Share of unprofitable enterprises	−0.00158	0.499
Share of "stable" industries	−0.00002	0.992
Profitability of production	−0.36677	0.179
Development programmes	0.11106	0.044
Density of railway tracks	0.00002	0.958
Density of roads	0.00132	0.143
Provision of telephones	−0.00633	0.063
Development of services	0.23208	0.055
Deficit in regional budget income	0.00012	0.365
Level of unemployment	2.104	0.286
Frontier region	0.033	0.371
R^2	0.37	
Durbin–Watson statistic	2.02	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.20	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.11	

Table 13. Factors in the granting of additional tax concessions to foreign investors.

Variables	k	$P > \|t\|$
Estimation of the lack of investment	0.00003	0.005
Dynamics of investment	0.00117	0.395
The number of regional investment laws passed	0.00142	0.704
Share of unprofitable enterprises	0.00934	0.143
Share of "stable" industries	0.00122	0.577
Profitability of production	0.29529	0.562
Development programmes	0.08898	0.415
Density of railway tracks	−0.00034	0.519
Density of roads	0.00190	0.134
Provision of telephones	−0.00856	0.138

Continued from p. 27

Variables	*k*	$P > \|t\|$
Development of services	0.31965	0.087
Deficit in regional budget income	−0.00005	0.422
Level of unemployment	0.61091	0.841
Frontier region	0.08662	0.372
R^2	0.15	
Durbin–Watson statistic	1.89	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.47	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.14	

The obtained estimations show that the factors determining the value of tax concessions and the period of their award in the investment law are estimations of the lack of investment in the region and the dissemination of this legislative initiative in the country. The greater is the demand for investment under conditions of unrealised investment projects, and the higher is the number of regions which have passed investment laws, the greater are the period and level of tax reliefs fixed by the law.

Concerning property tax relief and the period of tax exemptions, the dynamics of investment in a region is essential, while the larger the fall in investment, the higher the available tax reliefs and the longer their duration.

Other characteristics of regional development do not have an essential effect on the level of concessions and the period for which they are fixed by the investment law.

The regression estimations show that concessions to investors are less likely to be fixed in the investment law in regions having smaller estimations of the lack of investment, a more favorable industrial structure of production, and a less well-developed service sector. There is also a significantly positive correlation with the number of investment laws adopted in other regions. The latter fact can be explained by the wishes of regional administrations not to be behind the legislative activity of other regions, so as not to lose comparative advantages, but to retain the ability to grant tax reliefs to investors more flexibly.

The estimation of the lack of investment is the only significant factor in additional tax concessions being granted to foreign investors. The setting up of free economic zones, alongside this factor, is significant in

the adoption of regional programmes of development. Free economic zones can be considered as a part of the realisation of these programmes.

The results of the testing of the hypothesis about granting tax privileges to established enterprises and small businesses are shown in Tables 14–16.

The estimations show that activity in granting tax concessions to firms and industries, concerning not only the extension or setting up of new firms but also those aimed at older production facilities, has the same trend as the investment law. The number of investment laws passed is a positive and statistically significant factor in such concessions. The hypothesis about the irrelevance of such concessions to the attraction of investment is also confirmed. The estimations concerning the lack of investment, and its dynamics, are statistically unimportant as regards the tax concessions to separate firms or industries which are barely able to attract investors.

Table 14. Factors in individual tax reliefs to established enterprises.

Variable	v	$P > \|t\|$
Estimation of the lack of investment	0.00006	0.221
Dynamics of investment	0.00078	0.647
The number of regional investment laws passed	0.00733	0.032
Share of unprofitable enterprises	0.00722	0.024
Share of "stable" industries	−0.00487	0.043
Profitability of production	−0.46786	0.438
Development programmes	0.00466	0.942
Density of railway tracks	−0.00120	0.059
Density of roads	0.00016	0.893
Provision of telephones	0.00828	0.146
Development of services	−0.08871	0.346
Deficit in regional budget income	0.00004	0.314
Level of unemployment	10.4472	0.000
R^2	0.19	
Durbin–Watson statistic	2.03	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.26	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.15	

Table 15. Factors in industrial tax reliefs.

Variable	n	$P > \|t\|$
Estimation of the lack of investment	0.00003	0.081
Dynamics of investment	−0.00076	0.617
The number of regional investment laws passed	0.00928	0.007
Share of unprofitable enterprises	−0.00989	0.057
Share of "stable" industries	−0.00496	0.048
Profitability of production	−0.67061	0.109
Development programmes	0.17800	0.039
Density of railway tracks	−0.00060	0.348
Density of roads	−0.00119	0.323
Provision of telephones	0.00323	0.503
Development of services	−0.18298	0.207
Deficit in regional budget income	0.00010	0.169
Level of unemployment	1.99893	0.534
R^2	0.23	
Durbin–Watson statistic	2.04	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.19	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.11	

Table 16. Factors in tax reliefs to small businesses.

Variable	m	$P > \|t\|$
Estimation of the lack of investment	0.00016	0.168
Dynamics of investment	−0.00061	0.641
The number of regional investment laws passed	0.00278	0.238
Share of unprofitable enterprises	0.00130	0.612
Share of "stable" industries	0.17097	0.238
Profitability of production	0.17096	0.565
Development programmes	0.10432	0.027
Density of railway tracks	−0.00014	0.663
Density of roads	0.00088	0.378

Continued from p. 30

Variable	*m*	$P > \|t\|$
Provision of telephones	−0.00229	0.617
Development of services	0.07582	0.303
Deficit in regional budget income	0.00002	0.438
Level of unemployment	3.21017	0.041
R^2	0.17	
Durbin–Watson statistic	1.98	
White's general heteroscedasticity test: $P(\chi^2 \geq z)$	0.31	
Jarque–Bera test of normality: $P(\chi^2 \geq z)$	0.10	

Both individual and industrial tax concessions are more actively used in regions with unfavourable levels of industrial specialisation. Quite natural is the positive significant correlation between individual tax reliefs and the share of unprofitable firms in the region. The essential factor in concessions to separate firms is the high level of unemployment. Tax concessions to firms have the purpose of preventing the bankruptcy of those firms and to lessen the growth of unemployment.

The estimations of the regression make it possible to assume that industrial tax concessions are a part of the programmes of regional development approved by the regional authorities; there is a positive and significant dependence between these variables in the regression analysis.

Industrial and individual tax concessions do not depend on the level of the provision of public goods and on the income of the regional budget. The point is that granting concessions to unprofitable firms is scarcely likely either to improve or to worsen the regional budget as these grants are inexpensive.

The granting of concessions to small businesses significantly correlates only with the rate of unemployment and development programmes in the region. These can be considered as a part of regional programmes aimed at a decrease in unemployment and improving social stability in the region. These concessions are not connected with deficits in the regional budget; with the provision of the infrastructure of public goods and the attraction of external investment, capital costs in this field of business are comparatively low.

6. CONCLUSIONS

The empirical estimations have confirmed that, alongside the influence of the characteristics of industrial potential and the level of the provision of public goods, regional investment legislation has an essential effect on the supply of investment. More important for investors is not the value or the period in which tax concessions are granted but the fact of the adoption of the investment law, which demonstrates the readiness of regional administrations to support investors and the possibility of offering them guarantees. The significant role of the reputation of the regional authorities and of confidence in their decisions, in particular in the adopted laws, is in accord with this conclusion.

The positive effect of regional investment legislation may be overtaken by a combination of unfavourable factors, including industrial specialisation and an insufficient level of development of public goods, as well as an absence of laws due to a disadvantageous starting position of the region, although this does not mean a loss of investment attractiveness. The estimations of the empirical analysis show that legislative initiatives at the sub-federal level can compensate for some unfavourable factors in regional development, but they are not capable of being the only source of that development.

Those regional authorities having higher estimations of the lack of investment are more active in the adoption of investment legislation. Investment laws are considered as decreasing risks and creating a more favourable climate for business.

The diffusion in the practice of passing sub-federal investment laws has a tendency to increase the number of tax reliefs, as well as their period and flexibility. Regional authorities not only demonstrate support and guarantees for investors but also provide larger concessions. So we see not a simple imitation of legislative activity but its development. This is connected with the wish to maintain the comparative competitive position of the region and with the adaptation of the successful tax experiments of other regions.

APPENDICES

A. Regions in the legislative database "Consultant Plus: the regional legislation"

Presented in the database	Not presented in the database
Republic Kareliya, Republic of Komi, Arkhangelsk oblast', Nenestkie AO, Vologda oblast', Murmansk oblast', St.-Petersburg, Leningrad oblast', Novgorod oblast', Pskov oblast', Bryansk oblast', Ivanovo oblast', Kaluga oblast', Kostroma oblast', Moscow, Moscow oblast', Oryol oblast', Ryazan oblast', Smolensk oblast', Tver oblast', Tula oblast', Yaroslavl oblast', Republic Marie-el, Republic Mordovia, Republic Chuvashiya, Kirov oblast', Nizhny Novgorod oblast', Belgorod oblast', Voronezh oblast', Kursk oblast', Lipetsk oblast', Tambov oblast', Republic Kalmykia, Republic Tatarstan, Astrakhan oblast', Volgograd oblast', Penza oblast', Samara oblast', Saratov oblast', Ulyanovsk oblast', Republic Adiegeya, Republic Dagestan, Republic Kabardino-Balkariya, Krasnodar kraiy, Stavropol kraiy, Rostov oblast', Republic Bashkortostan, Republic Udmurtiya, Kurgan oblast', Orenburg oblast', Perm oblast', Sverdlovsk oblast', Chelyabinsk oblast', Republic "Altai", Altay kraiy, Kemerovo oblast', Novosibirsk oblast', Omsk oblast', Tomsk oblast', Tyumen oblast', Khanti–Manseiskei AO, Republic Buryatiya, Republic Khakasiya, Krasnoyarsk kraiy, Irkutsk oblast', Chita oblast', Republic Yakutia, Primorye kraiy, Khabarovsk kraiy, Amur oblast', Sakhalin oblast', Kaliningrad oblast'.	Vladimir oblast', Republic Ingushetia, Kapachaevo-Cherkesiay, Severnaya Ossetia, Komi-Permyaztkei AO, Iamalo-Nenestkie AO, Taimirskie AO, Evenkeiskie AO, Ust'-Ordinskie AO, Aginskie Buryatskie AO, Evreiskie AO, Chukotskie AO, Kamchatka oblast', Koryakskie AO, Magadan oblast', Republic Tuva.

B. Panel variables

Variable	Variable
Existence of an investment law	Share of unprofitable firms in region
Profit tax relief fixed in the law	Share of unprofitable firms in the industry Average profit in industry
Property tax relief fixed in the law	Industrial product
Period over which the reliefs are granted	Indices of production growth in industry
Variable reflecting a version of the law in which tax reliefs are determined by the regional administration	Expenditures of the regional budget
Individual tax exemptions	Incomes of the regional budget
Industrial tax exemptions	Industrial structure of production (share of electric power industry, fuel, timber, light, food-processing industry, ferrous and non-ferrous metals, engineering, construction materials industry)
Existence of free economic zones	Gross regional product
Tax concessions in the free economic zones	Fixed capital
Period over which concessions are granted in the free economic zones	Population of the region
Special concessions for foreign investors	Total number of unemployed
Tax exemptions for small businesses	Density of railway tracks in general use
Variable reflecting the cancellation of tax concessions	Density of roads
Development programmes in the region	Provision of telephones for the urban population
Investment in fixed capital	Services to the population
Share of investments at the expense of the budgetary funds	Price index in services
Indices of the growth of real investment	Number of firms
	Research staff

C. The characteristics of investment projects in the regions

Table C.1. Total demand for investment and the number of investment projects.

Region	Number of projects	Investments (billion rub.)
Tumen oblast'	53	55.49
Iamalo-Nenestkie AO	29	30.01
Khanti–Manseiskei AO	30	15.99
Tomsk oblast'	46	43.88
Omsk oblast'	70	26.09
Novosibirsk oblast'	107	26.26
Kemerovo oblast'	48	61.62
Altay kraiy	74	25.45
Republic "Altai"	38	12.45
Krasnoyarsk kraiy	213	122.24
Republic Khakasiya	46	11.53
Evenkeiskei AO	13	18.38
Republic Tuva	22	2.99
Irkutsk oblast'	123	66.90
Ust-Ordinskei AO	15	0.38
Republic Buryatiya	55	20.21
Chita oblast'	29	30.90
Aginskei Buryatskei AO	3	0.44
Novgorod oblast'	29	7.78

Table C.2. Distribution of investment projects by demand for investment.

Region	Over 10 billion rub.	From 1 to 10 billion rub.	From 0.1 to 1 billion rub.	From 0.01 to 0.1 billion rub.	From 0.001 to 0.01 billion rub.	Up to 0.001 billion rub.
Tumen oblast'	1	9	27	12	4	0
Iamalo-Nenestkie AO	1	2	4	14	8	0
Khanti–Manseiskei AO	0	6	8	12	4	0
Tomsk oblast'	1	6	15	18	5	1
Omsk oblast'	0	10	13	30	11	6
Novosibirsk oblast'	0	4	28	39	27	8
Kemerovo oblast'	1	4	14	21	5	3
Altay kraiy	1	2	14	21	34	2
Republic "Altai"	0	1	8	13	9	7
Krasnoyarsk kraiy	2	7	56	84	51	11
Republic Khakasiya	0	2	14	23	7	0
Evenkeiskei AO	0	5	3	3	2	0
Republic Tuva	0	0	6	6	6	4
Irkutsk oblast'	0	16	38	53	15	0
Ust-Ordinskei AO	0	0	2	4	9	0
Republic Buryatiya	0	4	24	22	4	1
Chita oblast'	0	12	11	6	0	0
Aginskei Buryatskei AO	0	0	1	2	0	0
Novgorod oblast'	0	1	5	5	18	

Table C.3. Distribution of investment projects by industry sector.

Region	Power and fuel	Metallurgy	Chemical	Engineering	Timber and wood	Construction materials	Consumer goods	Transport	Other
Tumen oblast'	11	0	12	7	6	0	2	3	12
Iamalo-Nenestkie AO	1	2	0	0	1	0	9	10	6
Khanti–Manseiskei AO	7	0	1	5	0	0	6	1	0
Tomsk oblast'	14	4	1	5	0	0	6	1	15
Omsk oblast'	8	0	7	33	0	3	6	2	11
Novosibirsk oblast'	18	3	8	35	1	7	11	8	16
Kemerovo oblast'	7	8	10	15	1	1	3	1	2
Altay kraiy	14	1	13	10	0	0	31	0	5
Republic "Altai"	14	3	0	1	0	0	8	2	10
Krasnoyarsk kraiy	13	20	29	69	36	9	6	9	22
Republic Khakasiya	18	8	0	2	4	2	4	0	8
Evenkeiskei AO	7	0	0	0	0	0	0	1	5
Republic Tuva	7	2	1	1	1	1	4	3	2
Irkutsk oblast'	20	10	9	13	3	1	16	7	44
Ust-Ordinskei AO	1	0	0	0	0	5	3	0	6
Republic Buryatiya	3	5	0	6	3	2	2	5	29
Chita oblast'	3	14	1	0	0	0	1	7	3
Aginskei Buryatskei AO	0	1	0	0	0	0	0	0	2
Novgorod oblast'	2	0	3	18	0	2	2	2	0

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